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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,947	04/17/2007	Christophe Bureau	033339/309984	1756

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EXAMINER

LEADER, WILLIAM T

ART UNIT	PAPER NUMBER
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1723

MAIL DATE	DELIVERY MODE
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07/21/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/573,947	BUREAU ET AL.	
	Examiner	Art Unit	
	WILLIAM LEADER	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-8, 10 and 11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-8, 10 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Receipt of the papers filed on May 2, 2011, is acknowledged. Claims 5, 12 and 13, directed to a non-elected invention have been canceled. Claim 9 has been canceled and its limitations incorporated into claim 1. Claims 1-4, 6-8, 10 and 11 are pending.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Response to Amendment

3. Applicant's amendment to claim 1 is deemed to have overcome the rejection of record under 35 U.S.C. 102.

Claim Rejections - 35 USC § 103

4. Claims 1-4, 6-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hodes et al (US 3,554,882).
5. The Hodes et al patent (hereinafter Hodes) discloses the deposition of a thick and adherent polymer coating on a metallic surface from a solution containing a solvent in which a monomer, acid and electrochemical initiator are soluble. See the abstract and column 1, lines 40-46. One solution disclosed by Hodes at column 2, lines 20-35 includes 10 ml water, 10 wt% acrylamide, 1 wt% N-N' methylenebisacrylamide and 2 wt % N-N' ethylene bisacrylamide, and 0.5ml concentrated HCl. Concentrated HCl contains 38% hydrogen chloride (Condensed Chemical Dictionary, pp 486-487). The HCl functions as a Bronsted acid which is a source of

protons. An amount of 0.5 ml of 38 % hydrogen chloride in 10 ml of water corresponds to approximately 19,000 ppm. Into this solution, two steel electrodes were placed. A voltage of 22.5V was applied and a polymer was formed on the cathode. This polymer formation corresponds to step b) of applicant's claim 1.

6. Claim 1 previously recited that at least one source of protons was present in an amount of between 50 and 100,000 ppm with respect to the total amount of the constituents of the electrolytic solution. Claim 1 has been amended to incorporate the limitations of claim 9 and recite that at least one source of protons is present in an amount of between 50 and 10,000 ppm. In the process of Hodes, the addition of 0.5ml HCl results in a particular concentration of HCl in the solution, indicating that concentration is a parameter that is controlled in the process of Hodes and, consequently, is recognized as a result-effective. Choice of concentrations of HCl would have been a matter of routine optimization within the skill of the ordinary worker in the art. See MPEP 2144.50 II. As stated in MPEP 214405 II, generally, differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration is critical.

7. With respect to claim 2, as noted above, the solution of Hodes contained hydrogen chloride.

8. With respect to claims 3 and 4, Hodes discloses the inclusion of acrylamide as a monomer in the solution. Acrylamide is one of the vinyl monomers recited in instant claim 4.

9. With respect to claim 6, acrylamide ($\text{CH}_2\text{CHCONH}_2$) has a molecular weight of 71, so approximating 1 liter of the solution of Hodes as 1000g, 10 wt% of acrylamide is 100 grams or 1.4 moles. This amount falls within the range recited in claim 6.

10. With respect to claim 7, Hodes discloses that the invention is not limited to only aqueous formulations. The solvent could be a polar organic compound such as dimethylformamide. See column 3, lines 18-25.

11. With respect to claim 8, the solution of Hodes additionally contains an electrochemical initiator such as hydrogen peroxide or a persulfate.

12. With respect to claim 10, as noted above, the electrically conducting surface used by Hodes was steel.

13. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hodes et al (US 3,554,882) as applied to claims 1-4, 6-8 and 10 above, and further in view of Jerome et al (US 6,375,821).

14. As indicated in the previous office action, claim 11 recites the use of potentiostatic or galvanostatic voltammetric conditions. As noted above, Hodes discloses the application of a voltage, but does not specify that the voltage is potentiostatic or the resulting current is galvanostatic. The Jerome et al patent is directed to a process for depositing a polymer by electrografting. See the abstract. To provide refined control of the electrolysis conditions Jerome discloses the use of either potentiostatic electrolysis or galvanostatic electrolysis. See column 3, lines 13-27. It would have been obvious to have utilized potentiostatic or galvanostatic conditions in the process of Hodes as taught by Jerome because refined control of the process would have been obtained.

Response to Arguments

15. Applicant's arguments filed May 2, 2011, have been fully considered but they are not persuasive. At page 6 of the Remarks, applicant argues that concentration is not a result effective variable in the process of Hodes. This argument is not convincing. At column 2, lines 22-27, Hodes clearly discloses the amounts of constituents added to the solution. The amounts added result in a particular concentration of the constituents in the solution. By controlling the amount of material added, Hodes demonstrates that concentration is a recognized result-effective variable. Additionally, one of ordinary skill in the art would have understood that the amount of acid added would have affected the pH of the solution. Note that the definition of pH is the logarithm of the reciprocal of the hydrogen-ion concentration (Hackh's Chemical Dictionary). As indicated in the summary of the invention at column 1, line 49 to column 2, line 19 of Hodes, pH is a parameter that affects the formation of polymer. See particularly column 2, lines 9-10. This disclosure additionally demonstrates that the concentration of acid is a recognized result-effective variable.

16. The nature of concentration as a result-effective variable is discussed in MPEP 2144.05 II. This section of the MPEP states that "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical." This section of the MPEP refers to *In re Aller* 105 USPQ 233, 235 (CCPA 1955) noting a "Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be *prima facie* obvious over a reference process which differed from the claims

only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.”

17. At page 7 of the Remarks, applicant discusses the experimental results presented in the application. As explained in MPEP 716.02, any differences between the claimed invention and the prior art may be expected to result in some differences in properties. The issue is whether the properties differ to such an extent that the difference is really unexpected. Evidence of unexpected results must be commensurate in scope with the claimed invention. The showing of unexpected results must be reviewed to see if the results occur over the entire claimed range. See MPEP 716.02(d). Applicant’s working examples have been reviewed but are not considered to be commensurate in scope with the invention as claimed, and are not considered to demonstrate unexpected results for applicant’s claimed process. Each of the examples uses a specific monomer and specific source of protons, while claim 1 broadly recites “one or more electropolymerizable monomers” and “at least one source of protons”. Further, the graphs referred to by applicant do not correspond to the claimed range of 50 to 10,000 ppm. Additionally, as written, claim 1 recites “at least one source of protons which is chosen from compounds which are Bronsted acids in the said electrolyte solution, the said source of protons being present in an amount of between 50 and 10,000 ppm with respect to the total amount of the constituents of the said electrolytic solution.” This limitation is interpreted to require *one* source of protons to be present in an amount of between 50 and 10,000 ppm but, since the claim recites “*at least one* source of protons”, encompassing within its scope the inclusion of any number of *additional* sources of protons in any amount. Thus, the *total* concentration of proton sources may extend well past 10,000 ppm.

18. Applicant has amended claim 1 to recite the formation of a polymer film on “a cathodic” electrically conducting or semiconducting surface. At page 8 of the Remarks, applicant argues that Naarmann relates to the electrochemical polymerization of pyrroles by anodic oxidation of monomers and is not concerned with the growth of polymer films on a cathodic surface. Applicant’s argument with respect Naarmann as applied to claim 1 as amended is persuasive.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM LEADER whose telephone number is (571)272-1245. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa D. Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William Leader/
July 15, 2011

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1723